

REMARKS

35 U.S.C. 112, first paragraph Rejections

Claims 1 – 30 stand rejected pursuant to 35 U.S.C. 112, first paragraph, as based on a disclosure that is not enabling. More particularly, the present Office action argues, “Applicants have not identified the element or elements responsible for making the disclosed device birefringent.” Applicant traverses these rejections for at least the following reasons.

To be an enabling disclosure, all that is necessary is that the specification teach how to make and use the claimed invention such that one skilled in the art be able to practice it given the level of knowledge and skill in the art. It is the Examiner's burden to establish a *prima facie* case of lack of enablement for the claimed invention. *MPEP* §2164.04. The Examiner must present evidence and reasons why a person skilled in the art would find that the teachings in the specification are not commensurate with the scope of protection sought by the claims.

The Examiner has not established a reasonable basis for questioning the sufficiency of the Applicant's disclosure when taken in combination with the level of knowledge and skill in the relevant art. In fact, Applicant respectfully submits the present disclosure does identify those elements of the present invention that render the disclosed device birefringent, which elements are clearly and unambiguously claimed.

For example, the present specification teaches:

the waveplate may include a birefringent region fabricated by periodically alternating high/low index of refraction three dimensional features, and forming underlying optical layers and overcoating optical layers. *Specification, Page 10, lines 13 – 15.*

Further, the present specification teaches:

[t]he birefringent region may be built of a grating of a material of a fixed index of refraction, and a material with a tunable index of refraction. *Specification, Page 11, lines 1 – 2.*

The specification also teaches, “[a]s may be seen in Figure 4, birefringence depends on the grating period.” *Specification, Page 28, lines 4 – 5.* Further yet, the present specification also teaches a birefringent device according to an aspect of the present invention may include a base, a cap and a subwavelength structure. *See, Specification, Page 15, lines 1 – 4; see also, Fig. 1A.* Also taught is that the “[s]ubwavelength structure 130 may include multiple sub-wavelength elements each of width F_G and height t_{130} .” *Specification, Page 15, lines 5 – 6.* Even further, the specification also teaches:

[a]s may be seen in Figure 1B, alternating refractive indices may be used. For example, a higher index material 136, having a refractive index n_F , may be positioned substantially adjacent to a lower index material 134, having a refractive index n_O , creating alternating regions of relatively high and low indices, respectively. ... By way of non-limiting example only, higher index material 136 may have a refractive index multiple times larger than the refractive index of lower index material 134, such as two or three times, for

example. *Specification, Page 15, line 16 – Page 16, line 6.*

Accordingly, Applicant respectfully submits the present specification does identify the elements responsible for making the disclosed device birefringent, and fully enables all of the present Claims in accordance with the requirements of 35 U.S.C. 112, first paragraph.

That being said, and in order to attempt to overcome this rejection, Applicant has amended Claim 1 to more clearly identify that said layer of periodic index regions of alternating refractive indices causes the birefringence. In this regard, Applicant relies on the section of the specification discussed hereinabove for support, and also the specification generally. Further, in support of Applicant's position fundamentals of physics dictate that birefringence is created by "crystalline substances (i.e. solids whose atoms are arranged in some sort of regular repetitive array)" with optical properties that "are not the same in all directions within a given sample." *Optics*, Hecht 3rd Ed. (1998) @ 330. Applicant respectfully submits that a layer of periodic index regions of alternating refractive indices fits the optical definition of solids that cause birefringence in that periodic index regions are arranged in a regular repetitive pattern and alternating refractive indices necessarily causes the optical properties (i.e. refractive index) to not be the same in all directions.

Wherefore, Applicant respectfully requests reconsideration and removal of these rejections.

35 U.S.C. 103 Rejections

Claims 1 – 23 and 26 – 30 stand rejected pursuant to 35 U.S.C. 103(a) as being unpatentable over Date (United States Patent No. 6,618,104) in view of Owen (United States Patent No. 6,692,797) and Simpson (United States Patent No. 6,661,952). Claims 24 and 25 stand rejected pursuant to 35 U.S.C. 103(a) as being unpatentable over Date in view of Owen and Simpson, further in view of Brinkman (United States Patent No. 5,852,688). Applicant respectfully traverses these rejections for at least the following reasons.

35 U.S.C. 103(a) sets forth in part:

[a] patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

To establish a prima facie case of obviousness, all of the recited claim limitations must be taught or suggested in the prior art. *See, MPEP 2143.03; see also, In re. Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).* Further, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings. *See, M.P.E.P. 706.02(j).* Further yet, the teaching or suggestion to make the claimed combination must be

found in the prior art, and not based on the applicant's own disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Amended Claim 1 recites, “wherein said device is suitable to produce an arbitrary phase retardation.” Applicant submits the Date reference fails to teach any such phase retardation being produced. Applicant respectfully submits the present Office action concedes this point, wherein it states Date teaches this limitation taking the phase retardation to be zero. *See, Office action, page 3, lines 6 – 7*. Applicant respectfully submits that a phase retardation of zero is, in fact, not a phase retardation at all. For example, a cup containing zero water, in fact, is not a cup containing water. In particular, Applicant submits that the very definition of a phase retarder is an element that does not remove either of the component E-vibrations but introduces **a phase difference between them**. *Introduction to Optics*, Pedrotti and Pedrotti 349 (1987) [Emphasis Added]. A “phase difference”, obviously, is a non-zero difference. Applicant respectfully submits that the introduction of zero phase difference in fact does not teach any phase difference at all. Further, Date is directed to display apparatus, *See, Abstract*, and, as such is altogether silent as to optical phase and optical phase retardation.

Accordingly, and contrary to the assertions of the present rejections, Applicant respectfully submits Date fails to teach the claimed arbitrary phase retardation. Further, Applicant respectfully submits that Owen, Simpson and Brinkman each fail to remedy at least this shortcoming of Date, either alone or in any combination. Therefore, Applicant respectfully submits the cited prior

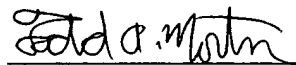
art fails to render at least Claim 1 unpatentable – at least by virtue of the recited limitation that the device is suitable to produce an arbitrary phase retardation.

Wherefore, Applicant respectfully requests reconsideration and removal of the 35 U.S.C. 103(a) rejection of Claim 1 for at least the foregoing reasons. Applicant also respectfully requests reconsideration and removal of the 35 U.S.C. 103(a) rejections of Claims 2 – 30, at least by virtue of these Claims' ultimate dependency upon a patentably distinct base Claim 1.

CONCLUSION

Wherefore, Applicant believes he has addressed all outstanding grounds raised by the Examiner and respectfully submits the present case is in condition for allowance, early notification of which is earnestly solicited. Should there be any questions or outstanding matters, the Examiner is cordially invited and requested to contact Applicant's undersigned attorney at his number listed below.

Respectfully submitted,



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